

tested shall be measured by a visual photometer or equivalent photometric device while the specimen is supported in a horizontal position and the photometer is at right angles to the axis of the specimen. Visual luminous intensity readings shall be observed and recorded at approximately 5-second intervals during the burning of the specimen. The minimum photometric distance shall be 3 m (10 ft.). Recording photometers shall have a chart speed of at least 10 cm (4 in.) per minute. The luminous intensity of the specimen shall be computed as the arithmetical average of the readings recorded. The average luminous intensity of a specimen shall be not less than 20,000 candela.

(2) *Elevated temperature, humidity, and storage.* Place specimen in a thermostatically controlled even-temperature oven held at 75 °C. with not less than 90 percent relative humidity for 72 hours. Remove specimen and store at room temperature (20° to 25 °C.) with approximately 65 percent relative humidity for ten days. If for any reason it is not possible to operate the oven continuously for the 72-hour period, it may be operated at the required temperature and humidity for 8 hours out of each 24 during the 72-hour conditioning period. (Total of 24 hours on and 48 hours off.) The signal shall not ignite or decompose during this conditioning. The signal shall fire and operate satisfactorily following this conditioning.

(3) *Spontaneous ignition.* Place the specimen in a thermostatically controlled even-temperature oven held at 75 °C. with not more than 10% relative humidity for 48 consecutive hours. The signal shall not ignite or undergo marked decomposition.

(4) *Chromaticity.* The color of the burning signal must be vivid red as defined by Sections 13 and 14 of the "Color Names Dictionary." Two identical test plates of white cardboard about 30 cm × 60 cm (12"×24") are used. Except for a negligible amount of stray daylight, the first test plate is illuminated by light from the specimen placed at a distance of about 1.5 m (5 ft.). The second test plate is illuminated only by light from an incandescent lamp operated at a color tempera-

ture close to 2,848° K at a distance of about 30 cm (1 ft.). The first plate is viewed directly, the second through combinations of Lovibond red, yellow, and blue glasses selected so as to approximate a chromaticity match. By separating the test plates by a wide unilluminated area (subtending at the observer about 45°), it is possible to make accurate determinations of chromaticity in terms of the 1931 CIE Standard Observer and Coordinate System, in spite of fluctuations in luminous intensity of the specimen by factors as high as 2 or 3. The CIE coordinates are converted to the Munsell notation which is cross-referenced to the color name in Section 13 of the "Color Names Dictionary" (see the discussion in Section 10 of "The Universal Color Language").

§ 160.036-5 Marking.

(a) *General.* Each hand-held rocket-propelled parachute red flare distress signal shall be legibly marked or labeled as follows:

(Company brand or style designation)
HAND-HELD ROCKET-PROPELLED PARACHUTE
RED FLARE DISTRESS SIGNAL—20,000 candela—30 seconds burning time. USE ONLY WHEN AIRCRAFT OR VESSEL IS SIGHTED. DIRECTIONS—(In numbered paragraphs, simply worded instructions for firing the device). Service Life Expiration Date (date to be inserted by manufacturer) (Month and year manufactured) (Lot No. ____) Manufactured by (Name and address of manufacturer) U.S. Coast Guard Approval No. ____.

(b) *Marking of expiration date.* The expiration date must be not more than 42 months from the date of manufacture.

(c) *Other marking.* (1) On each hand-held rocket propelled parachute red flare distress signal there shall be die-stamped in figures not less than 3 mm ($\frac{1}{8}$ in.) high, on the signal, numbers indicating the month and year of manufacture, thus: "6-54" indicating June, 1954.

(2) The pyrotechnic candle shall be legibly marked with the month and year of manufacture.

(3) In addition to any other marking place on the smallest packing carton or box containing signals, each carton or box shall be plainly and permanently

§ 160.036-6

marked to show the service life expiration date, date of manufacture, and lot number.

(4) The largest carton or box in which the manufacturer ships signals must be marked with the following or equivalent words: "Keep under cover in a dry place."

NOTE: Compliance with the labeling requirements of this section does not relieve the manufacturer of the responsibility of complying with the label requirements of 15 U.S.C. 1263, the Federal Hazardous Substances Act.

§ 160.036-6 Container.

(a) *General.* The container for storing the signals on lifeboats and liferafts is not required to be of a special design or be approved by the Coast Guard. The container must meet the requirements in Subpart 160.021 (§160.021-6) except that the wording on the container must be:

HAND-HELD ROCKET-PROPELLED PARACHUTE
RED FLARE DISTRESS SIGNALS

(b) [Reserved]

§ 160.036-7 Procedure for approval.

(a) Signals are approved by the Coast Guard under the procedures in subpart 159.005 of this chapter.

(b) [Reserved]

Subpart 160.037—Hand Orange Smoke Distress Signals

SOURCE: CGD 76-048a and 76-048b, 44 FR 73085, Dec. 17, 1979, unless otherwise noted.

§ 160.037-1 Incorporation by reference.

(a) The following are incorporated by reference into this subpart:

(1) "The Color Names Dictionary" in *Color: Universal Language and Dictionary of Names*, National Bureau of Standards Special Publication 440, December 1976.

(2) "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956.

(b) NBS Special Publication 440 may be obtained by ordering from the Superintendent of Documents, U.S. Government Printing Office, Washington,

46 CFR Ch. I (10-1-11 Edition)

DC 20402 (Order by SD Catalog No. C13.10:440).

(c) NBS Report 4792 may be obtained from the Commandant (CG-521), 2100 2nd St., SW., Stop 7126, Washington, DC 20593-7126.

(d) Approval to incorporate by reference the materials listed in this section was obtained from the Director of the Federal Register on November 1 and 29, 1979. The materials are on file in the Federal Register library.

[CGD 76-048a and 76-048b, 44 FR 73085, Dec. 17, 1979, as amended by CGD 82-063b, 48 FR 4782, Feb. 3, 1983; CGD 88-070, 53 FR 34535, Sept. 7, 1988; CGD 95-072, 60 FR 50467, Sept. 29, 1995; CGD 96-041, 61 FR 50733, Sept. 27, 1996; USCG-2009-0702, 74 FR 49237, Sept. 25, 2009]

§ 160.037-2 Type.

(a) Hand orange smoke distress signals specified by this subpart shall be one type which shall consist essentially of a wooden handle to which is attached a tubular casing having a sealing plug at the handle end, the casing being filled with a smoke producing composition and fuse with button of ignition material at the top, and a removable cap having a friction striking material on its top which may be exposed for use by pulling a tear strip. The signal is ignited by scraping the friction striker on top of the cap against the igniter button on top of the body of the signal. Alternate arrangements which conform to the performance requirements of this specification will be given special consideration.

(b) [Reserved]

§ 160.037-3 Materials, workmanship, construction, and performance requirements.

(a) *Materials.* The materials shall conform strictly to the specifications and drawings submitted by the manufacturer and approved by the Commandant. The color of the tube shall be orange. The combustible materials shall be of such nature as will not deteriorate during long storage, nor when subjected to frigid or tropical climates, or both.

(b) *Workmanship.* Hand orange smoke distress signals shall be of first class workmanship and shall be free from imperfections of manufacture affecting their appearance or that may affect